Trend Study 16R-1-04

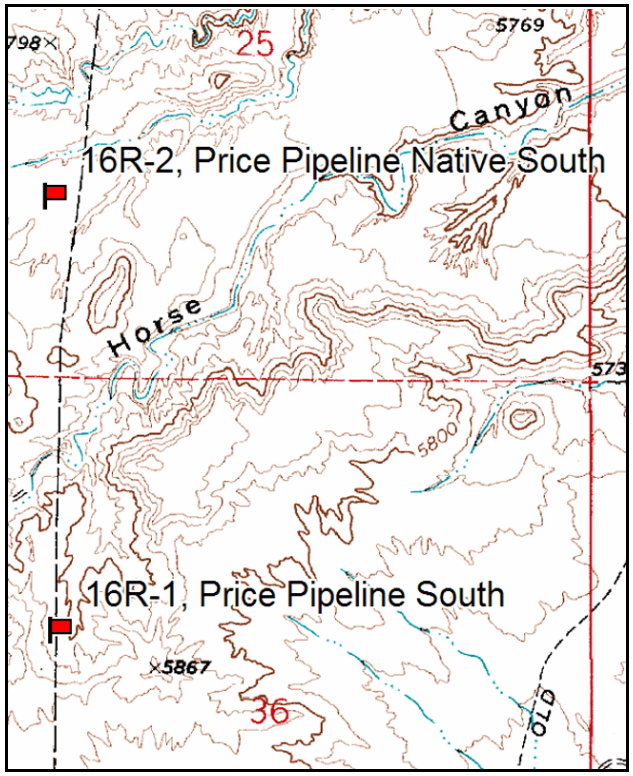
Study site name: Price Pipeline South . Vegetation type: Desert Shrub .

Compass bearing: frequency baseline 349 degrees magnetic.

There are no frequency belts on this site. The quadrats are placed on the baseline every five feet, alternating left and right sides. The quadrats point down the line.

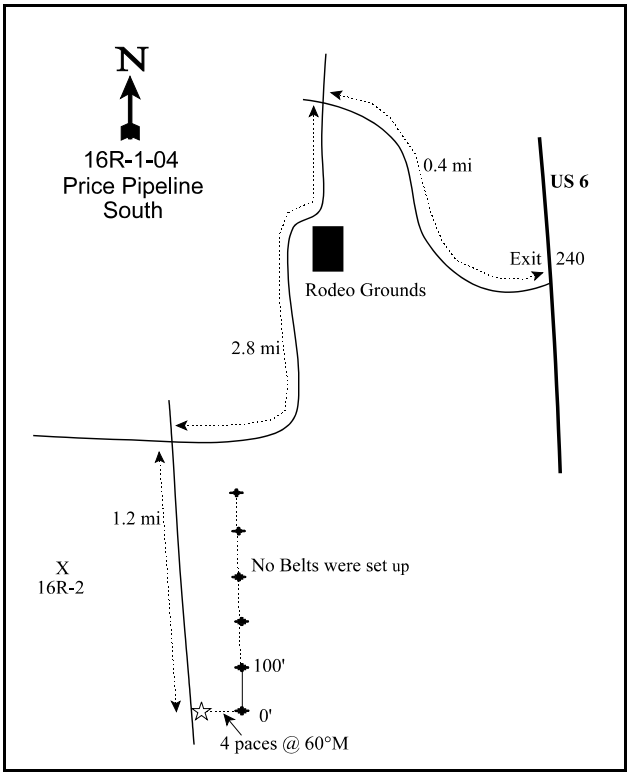
LOCATION DESCRIPTION

Take exit 240 off of US 6 and head west 0.4 miles to an intersection. Turn left at this intersection and go 2.8 miles, through the rodeo grounds to another intersection. Turn left (south) and drive 1.2 miles past site 16R-2 to a witness post on the left side of the road. From the witness post walk 4 paces at 60° M to the 0-foot stake. The 0-foot stake is marked with browse tag number 89. The study is marked by 12-18 inch high, green, steel fenceposts.



Map name: Price .

Township 14S , Range 9E , Section 36



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4379341 N, 511317 E

DISCUSSION

Price Pipeline South - Trend Study No. 16R-1

The Price Pipeline South study was established in 1997 to monitor effects of rangeland drilling to rehabilitate after the disturbance for an underground natural gas pipeline. Study number 16R-2 was paired with this site to compare the pipeline to the undisturbed native community. The study is located about 4 miles southwest of Price and is characterized as a desert shrub community. Due to a rain shadow, this area has a poor site potential. This site has a slight slope of 2% with an aspect to the northeast. Elevation is 5,800 feet. Pellet group data in 2004 showed only light use by wildlife. Deer or antelope use was estimated as 9 days use/acre (21 ddu/ha) and elk use was 4 days use/acre (10 edu/ha). Livestock use was about 5 days use/acre (13 cdu/ha).

Soil depth is moderate with an estimated effective rooting depth of just over 9 inches. The soil has a slightly alkaline pH (7.4). Very few rocks were found in the profile. Phosphorus is low at 3.2 ppm. Organic matter is also low at less than 1%. Textural analysis indicates this soil is a loam. This soil is susceptible to erosion because there is very little protective cover. Relative percent bare ground cover was 92% in 1997. In 2004, relative percent bare ground went down to 86%. An erosion class index in 2004 rated erosion on this site as moderate. Gullies and pedestaling are evidence of ongoing erosion.

Shadscale is the browse species found in the greatest abundance. Density increased from 1,440 plant/acre in 1997 to 1,600 plants/acre in 2004. In 1997, all of the population was classified as young after the disturbance for the pipeline. In 2004, 91% of the population was mature with 9% young. No plants were decadent. Cover increased from less than 1% to 3% in 2004. Black sagebrush, Gardner saltbush, and corymbed buckwheat were also found in small numbers.

Long term results indicate little success for the drill seeding. No data was available for what was seeded. Crested wheatgrass was the only species found that typically is used in range seedings. It decreased significantly in 2004 in sum of nested frequency from 1997. Crested wheatgrass was found in 57% of quadrats in 1997 and was only found in 4% in 2004. Western wheatgrass also decreased significantly. Grass cover decreased from 3% in 1997 to 0.5% in 2004. Forbs are diverse, but not abundant. Halogeton and Russian thistle are the most dominant forb species and both increased significantly in 2004.

The paired native study near this one shows few differences. Perennial grasses and browse are sparse and is also covered by invasive annual weeds. This area has low site potential and revegetation success is difficult.

2004 TREND ASSESSMENT

Soil trend is stable, but in very poor condition. Relative percent bare soil decreased a little but not enough to warrant an improving trend. There is very little ground cover and erosion is apparent on this site. The slight slope prevents large scale erosion. Browse trend is slightly up as shadscale has gone from a young to mature population. Recruitment was 9% in 2004 and a few seedlings were encountered. The herbaceous understory trend is down. Abundance of grasses decreased ten-fold in 2004. Halogeton and Russian thistle are the most dominant forbs. The Desirable Components Index (see methods) rating was very poor in 1997 as there was very little browse and improved to poor to fair in 2004. Shadscale cover increased and there were many young plants, but this is still rated as poor winter range.

TREND ASSESSMENT
soil - stable (3)
browse - up slightly (4)
herbaceous understory - down (1)
1997 winter range condition (DC Index) - 9 (very poor) desert shrub type
2004 winter range condition (DC Index) - 26 (poor to fair) desert shrub type

HERBACEOUS TRENDS --
Management unit 16R, Study no: 1

Type	Species	Nested Frequency '97	Nested Frequency '04	Average Cover % '97	Average Cover % '04
G	Agropyron cristatum	$_{b}$136	$_{a}$10	.91	.10
G	Agropyron smithii	$_{b}$299	$_{a}$15	2.32	.29
G	Oryzopsis hymenoides	19	19	.07	.14
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		454	44	3.31	0.54
Total for Grasses		454	44	3.31	0.54
F	Astragalus convallarius	1	1	.00	.03
F	Astragalus spp.	-	9	-	.02
F	Castilleja spp.	4	-	.01	-
F	Cordylanthus kingii (a)	-	9	-	.02
F	Eriogonum inflatum	$_{b}$54	$_{a}$34	.14	.22
F	Euphorbia spp.	$_{a}$6	$_{b}$24	.03	.17
F	Halogeton glomeratus (a)	$_{a}$133	$_{b}$313	.30	1.38
F	Helianthus annuus (a)	15	16	.02	.07
F	Hymenoxys acaulis	-	-	-	.00
F	Hymenoxys richardsonii	-	3	-	.06
F	Kochia spp.	1	-	.03	-
F	Lappula occidentalis (a)	-	6	-	.01
F	Malcolmia africana	$_{a}$-	$_{b}$80	-	.85
F	Machaeranthera canescens	-	4	-	.07
F	Machaeranthera grindelioides	5	15	.19	.58
F	Oenothera caespitosa	16	17	.05	.32
F	Penstemon carnosus	-	1	-	.03
F	Salsola iberica (a)	$_{a}$156	$_{b}$302	.42	1.63
F	Trifolium gymnocarpon	$_{b}$33	$_{a}$1	.13	.03
F	Unknown forb-annual (a)	3	-	.00	-
Total for Annual Forbs		307	646	0.75	3.12
Total for Perennial Forbs		120	189	0.59	2.41
Total for Forbs		427	835	1.35	5.53

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 16R, Study no: 1

Type	Species	Strip Frequency '97	Strip Frequency '04	Average Cover % '97	Average Cover % '04
B	Artemisia nova	2	2	.06	.30
B	Atriplex confertifolia	42	45	.29	3.09
B	Atriplex gardneri	4	17	.03	.09
B	Chrysothamnus nauseosus	0	12	-	.14
B	Eriogonum corymbosum	10	7	.04	.08
Total for Browse		58	83	0.43	3.72

CANOPY COVER, LINE INTERCEPT --
Management unit 16R, Study no: 1

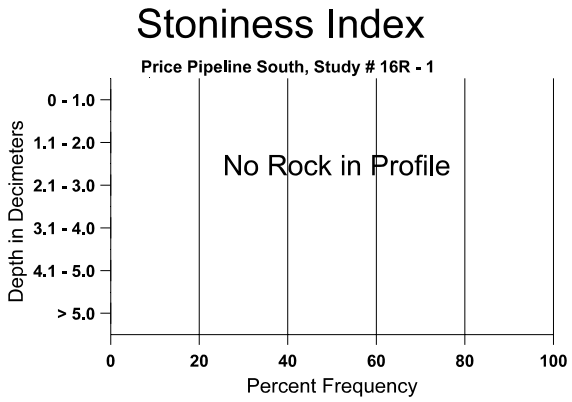
Species	Percent Cover '04
Atriplex confertifolia	2.48
Atriplex gardneri	.23
Chrysothamnus nauseosus	.05

BASIC COVER --
Management unit 16R, Study no: 1

Cover Type	Average Cover % '97	Average Cover % '04
Vegetation	4.47	8.90
Rock	.55	1.71
Pavement	.64	1.81
Litter	1.58	2.69
Cryptogams	.04	0
Bare Ground	85.52	89.27

SOIL ANALYSIS DATA --
Management unit 16R, Study no: 1, Study Name: Price Pipeline South

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
9.3	64.0 (12.7)	7.4	21.4	44.7	33.8	0.9	3.2	230.4	3.9



PELLET GROUP DATA --
Management unit 16R, Study no: 1

Type	Quadrat Frequency '97	Quadrat Frequency '04	Days use per acre (ha) '04
Sheep	-	2	-
Rabbit	-	1	-
Elk	-	6	4 (10)
Deer	5	10	9 (21)
Cattle	2	1	5 (13)

BROWSE CHARACTERISTICS --
Management unit 16R, Study no: 1

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Artemisia nova												
97	**40**	-	20	20	-	160	0	0	-	-	0	6/11
04	**40**	80	-	40	-	-	0	0	-	-	0	7/12
Atriplex confertifolia												
97	**1440**	180	1440	-	-	40	0	0	-	-	0	-/-
04	**1600**	40	140	1460	-	40	3	0	-	-	0	9/17
Atriplex gardneri												
97	**80**	-	80	-	-	-	0	0	0	-	0	-/-
04	**760**	-	120	560	80	20	0	0	11	5	5	4/15
Chrysothamnus nauseosus												
97	**0**	-	-	-	-	-	0	0	-	-	0	-/-
04	**280**	3200	80	200	-	-	21	7	-	-	0	12/19

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Chrysothamnus viscidiflorus stenophyllus												
97	**0**	-	-	-	-	-	0	0	-	-	0	-/-
04	**0**	-	-	-	-	-	0	0	-	-	0	7/10
Eriogonum corymbosum												
97	**280**	-	280	-	-	-	0	0	-	-	0	-/-
04	**160**	300	60	100	-	-	0	13	-	-	0	5/10
Gutierrezia sarothrae												
97	**0**	-	-	-	-	-	0	0	-	-	0	-/-
04	**0**	-	-	-	-	-	0	0	-	-	0	9/15